# Project Briefing - 3

**Group 4**

**System: Lawson (Supply chain/materials management)**

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## Accomplishments/ Progress to date:

Gathering information of Materials management systems from various articles, Lawson’s website and searching for various materials management systems. Looking for articles on how systems like Lawson support various healthcare organizations. We have discovered that Lawson has a number of software solutions. We are planning to focus on the supply chain solution, because that is what UAB focuses on in a partnership with Cardinal Health.

We recently completed an on-site visit with Dennis Sanchez and Tish Stewart to learn more about how UAB uses Lawson for Just In Time (JIT) materials management.

**About Lawson:**  
 “With Lawson, you get enterprise resource planning (ERP) software solutions that focus on your industry to provide you the competitive advantage and flexibility you expect in best-practice business process automation.” (<http://www.lawson.com/wcw.nsf/pub/applications_index>) Lawson offers variety of solutions to manage businesses depending on the size and requirement of the business.

Some of the major advantages of Lawson systems to manage businesses are as follows:

* Improve business process automation
* Improve overall workflow
* Promote business effectiveness and efficiency
* Flexibility of operations
* Manage security and user access
* Enable easy integration with existing services and emerging technologies

Lawson Business Process Management assists in administrative and operational system applications. It mainly supports IBM products. Lawson assures excellent performance and lower total cost of ownership (TCO). The system can be customized to individual needs of the business. Lawson system provides two different options to manage businesses:

A: Lawson M3 Business Process Management: This particular tool focuses on manufacturing and distribution related functions.

B: Lawson S3 Business Process Management: This particular tool focuses on service sector applications.

**Healthcare Supply Chain Information:**

Hospitals want to optimize their supply chains for a variety of reasons:

* stocking pharmaceuticals and supplies tie up a lot of capital
* labor costs to maintain materials supplies are significant
* availability and timely delivery is important

supplies need to be tracked for billing

* patient safety depends on right medication to right person at right time

Aspects of supply chain management

* pharmacy
* OR
* materials

Technologies currently in use:

* bar code scanning
* automatic dispensing machines (ADMs) that can be monitored remotely, with a picture taken every night and a PO created from that picture
* Picksys systems that monitor who accessed the contents of a supply cabinet
* GS1 System – a standard of global and unique identification of products and locations as well as continuous, automatic updates of standardized product information across all supply chain partners. It involves applying data standards to patients, processes, and products to eliminate errors, cases of unavailability, and improve service level quality and efficiency.
* RFID tags and readers to locate and track supplies in real time

Supply chain is part of a larger Enterprise Resource Management program, which includes accounting, supply chain, and human resources. As such, Lawson is an ERP vendor.

**Benefits of Lawson Supply Chain Management suite:**

* reduced process and supply costs through centralized purchasing
* lower inventory costs
* reducing steps in the procurement process
* improving decision making with metrics

**Case Study: Phoenix House**  
In the case study of the Phoenix House, a substance abuse treatment center for adults and adolescents, the facility used Lawson’s Materials Management and Financial solution software to improve the efficient and reliability of their materials management processes. Lawson was able to help Phoenix House:

* Create online requisitions
* Electronically route requisition approval
* Track activity from requisition to purchase order or warehouse demand
* Provide three-way match among purchase order, receipt, and invoice
* Generate inventory replenishment reports to notify warehouses to provide “just-in-time” inventory

The implementation of these changes in the processes allowed for employees of Phoenix House to do the above functions in less time and with a significant decrease in paperwork. The Lawson financial solution software has also been vital to improving the financial reporting of the Phoenix House. Since Phoenix House is a non-profit organization they must abide by much more complex financial reporting requirements than for-profit organizations. Lawson was able to do this by:

* Allowing accounts to generate and write their own reports, thus saving time and eliminating miscommunication between accounts and MIS.
* Making information more accessible. A user can be in the general ledger and use the software to easily access information in Accounts Payable in order to look at invoices and payment dates

## Issues encountered and proposed resolutions:

We have found the Lawson site to be largely a marketing vehicle without a lot of concrete information. However, the site visit filled in a lot of gaps in our knowledge. We have captured some additional questions for Dennis and Tish that we emailed to them.

## Contribution(s) of each group member:

We have all read the articles each group member has found on Lawson. Our articles are all posted on our team wiki, which is available here: <http://hi-602lawson.wikispaces.com/Articles+and+Documents>

Each member participated in the literature review and the on-site visit. Each member also contributed to answering the background questions. All members contributed questions to a follow up e-mail sent to our contacts UAB. We are now working on the outline and slides for the presentation.

## Questions for which you cannot/have not find an answer

* 1. Details of the system architecture Lawson uses?

## Any risks to your group project deliverable

## None identified

## General Comments/Connections you’ve made between this course and either HI 601, HI 640 or HI 600

We can relate this project to previous courses in this program from various angles such as data maintenance, integration, data collection, business process redesign, user interface, cost and benefits of new systems and more. We see a lot of overlap between this system and the business process redesign topics we covered in HI-640, such as Lean, Six Sigma, etc. We are also seeing that a Lawson implementation is larger than the software itself, and involves some culture change, standardization of practices and coding, and workflow changes to accommodate the system. It’s not unlike CPOE in this way.

## Background questions and answers

1. **Describe the origin and progression of the technology.**

Before acquiring Lawson, UAB used an electronic system called ESI for ordering and tracking in materials management. For twenty years the ESI was used to order supplies in mass bulk for the hospital. The supplies were stored in an on-site warehouse. The ESI system required costly and inefficient processes in materials management. When a department within the hospital needed supplies, they would order it through ESI and the message would be sent to the warehouse. The employee at the warehouse would then have to locate the supplies in the warehouse, remove the supplies from the shelf/scaffold it was on, and then deliver it to the department. The system required a large number of employees to store, retrieve, and deliver the materials to the needed departments. It required the hospital ordering 3 to 4 months worth of supplies—some of which required monitoring to make sure they did not expire (i.e. medications, insulin).

Due to these costs and inefficiencies, UAB hospital decided adopt a “Just In Time” (JIT) philosophy in dealing with their inventory: focusing on getting the necessary materials to the correct department as close to real-time as possible without having to maintain a massive inventory. They decided to switch to Lawson as a means to achieve the goals of JIT. Lawson was selected over the hospital’s HR and financial software system Oracle due to Lawson’s provided more services and flexibility in its usage; and Lawson was already in use at The Kirkland Clinic. Implementation of the Lawson system began in January of 2002 and concluded in April of 2003. They interfaced Lawson with Oracle using a flat/fixed format style that uses SQL commands to communicate with Oracle. Lawson allows UAB hospital for the Unit Secretaries and nurses to request orders anytime of the day via a handheld counting device. The orders can be processed and the materials delivered within 24 hours. These changes have improved materials management at UAB by eliminating mass storage of materials—materials are maintained for a 3-4 day supply instead of a 3-4 month supply—thereby freeing up warehouse and capital. Furthermore, because of the decreased need to keep up with the massive inventory storage, the number of employees needed in materials has been decreased from 116 to 54.

1. **What does the technology do?**

Lawson manages materials and maintains acceptable levels of inventory by using the par level system. A par is the maximum level of a material that is allowed to be in a department at any time. Lawson manages the existing inventory and places orders for the various departments when supply numbers fall below a minimum pre-set threshold. This is achieved by using a handheld scanner forms to count the inventory levels at each department. This greatly increases the efficiency in counting and ordering supplies. Reports give the supply staff information on the inventory levels so that they can be adjusted if necessary. The reports also provide information about costs, utilization, and other metrics. The ordering of supplies can only be done by approved individuals (all nurses and unit secretaries) by the using of a unique identifier in order to make sure no unauthorized individuals can order supplies and to protect patient confidentiality. Orders can be done by item number, premade template, lists, or in a catalog “shopping” paradigm.

1. **Who are the end Users?**

The Lawson System is used by Support Services Department (SSD) employees who receive, store and deliver materials to various users throughout the hospital. These employees include workers who receive and scan packages from Cardinal, the major distributor of supplies to the medical center as well as supply clerks who manage paper packing slips for materials from FedEx and UPS and other shippers. Utilizing the Lawson system they perform “mail room” type duties, cross-checking packages with computerized orders. Par levels of supplies are maintained on units and in stockrooms by a team of employees who visit each location six days per week and count remaining inventory with a hand held scanner which then syncs with the Lawson main system to determine what materials require replenishment. The entire department is supervised by managers who access the system to monitor the cycle. Higher levels of administration in finance and accounting also utilize the system, although purchasing is actually run under another system from UAB which interfaces with Lawson.

One major feature of the Lawson system is the ability for orders for materials to be placed by anyone with access to the system. Typically, this is done by dedicated supply managers on larger units. However, physicians, nurses and unit secretaries are trained to use the system and can place orders as well. Over 2000 employees are trained on the system, but approximately 500 individuals are regular users. No special degree is required. Nurses do 45 minutes of training. System administrators also don’t need a specialized degree but sometimes attend special trainings such as the Lawson User Group conference, classes or academies, and specific Lawson labs.

1. **What organizations drive the data sets that are captured?**

There are a number of organizations that drive the data sets:

Within UAB, the hospital and suppliers (largely Cardinal) and manufacturers drive the data that is entered into the item master file in Lawson. Each item has an item master, and there are 31,495 items in the Lawson Item File. The item master contains all of the different item numbers (manufacturer, distributor, and hospital Lawson numbers), descriptive information, cost, and additional manufacturer information for a specific item. The item master is composed of a number of tables, all of which reside, along with other tables, in the Lawson relational database. The item master is related to several other files:

* packaging table – this table describes the kind of packaging that the supply arrives in. This is especially important to keep numbers accurate and indicate the quantity as an each, a case, a pallet, etc.
* vendor item file – this set of tables contains information about vendor agreements including the contract and other necessary vendor information.

Specialty items are ordered through an approval process, because they don’t have Lawson numbers and thus aren’t part of the item master files.

UAB uses a set of codes call United Nations Standard Products and Services Classification (UNSPSC) codes that allow the Support Services Department (SSD) to compare against other institutions. UNSPSC codes are not item codes or item numbers, but instead are classification codes that group similar products and facilitate commerce between buyers and sellers, allowing buyers to code purchases to analyze their spending ("What is UNSPSC?"). UNSPSC codes assist with analysis across the UAB enterprise with a common set of identifiers.

Data is also affected by GS1 standards for healthcare supply chain. The GS1 system enables global and unique identification of products and locations, as well as the continuous, automatic update of standardized product information across all supply chain partners (Pelletier, 2009)

As described on the GS1 Standardization…Stat! page, “GS1 data standards support healthcare business processes and enable many benefits for patient safety and supply chain management, including:

* Fewer medication errors
* More effective product recalls
* Efficient traceability
* More time with patients, less time on manual documentation
* Cost reduction through increased supply chain efficiency
* Improved order and invoice processes
* More efficient receiving
* Reduced inventory
* Increased productivity in business processes
* Improved shelf life management
* Improved service levels/fill rate
* Elimination of product re-labeling with proprietary codes
* Supports regulatory compliance”

("Standardization… Stat! Improving the Healthcare Supply Chain with Data Standards", 2010)

This standardization is not yet universal. Many institutions have already agreed on sunrise dates for implementing GS1 standardization in 2010. UAB does not currently adhere to these standards, but may be affected by them if Cardinal Health adopts them. Cardinal Health and Mayo Clinic have already implemented GS1.

Standardization does affect UAB in terms of Electronic Data Interchange (EDI) for invoicing and payment. This functionality is provided by the vendor Global Healthcare Exchange (GHX) which integrates with Lawson to automate the hospital’s procurement to payment cycles (Pelletier, 2009). GHX uses Global Location Numbers (GLNs) as part of the GS1 standard to maintain a single address for all provider facilities that reconcile with a physical address maintained by the US Postal Service. Each GLN is specific to only one exact and very precise location within the world (Pelletier, 2009). The result is that vendors who also use the GLN standard have the exact ship to address for the facility, ensuring correct delivery. This also eliminates duplicate and redundant accounts that may be in the system for any vendor.

The Joint Commission may also drive data capture in Lawson. The Joint Commission’s National Patient Safety Goals include guidelines for labeling medications. This is related to the Lawson project insofar as medications must be relabeled if the barcode containing GS1 standard information is not on the medication itself but some kind of external packaging that is removed before it reaches the supply cabinet or the patient. In addition, the Joint Commission has standards for emergency management. These standards may affect materials management in terms of keeping a specific minimum supply of materials on hand in case of disaster. We learned on our site visit that UAB can order additional supplies based on previous use if a disaster (such as a hurricane or snow storm) is anticipated.

1. **What electronic data feeds into the upstream system and what data/information is fed to downstream systems?**

Data going upstream (into Lawson) includes:

* Data from the university-wide vendor management system via an Oracle interface
* Orders from nurses and unit secretaries, although this technically occurs within Lawson’s online interface
* Data from barcode scanning when supplies arrive by Cardinal Health truck or through UPS/FedEx

In terms of the Lawson online interface, users can order an item by entering the Lawson number if they know it, or can use a shopping paradigm to search the product catalog and add products to a cart. They can also use templates created by SSD staff based on common product sets to place standard orders.

Data also comes in to Lawson from the handheld devices the counters use each night to count the existing supply inventory. These handhelds contain forms for noting existing supply according to the physical layout of the closet or cabinet. After the counter is finished, he or she syncs the handheld with the Lawson system. UAB is currently working on implementing an RFID system that would allow counters to upload their inventory counts in real time, which will improve the process flow by allowing orders to be placed almost immediately.

Data downstream (out of Lawson) to vendors is done through GHX as mentioned above. Orders go into Lawson and become requisitions, which then become purchase orders, which then go through the GHX EDI system for vendor fulfillment.

The GHX system integrates with Lawson to allow UAB to automate the invoicing lifecycle. This improves payment accuracy and reduces invoice processing cycle times ("GHX At-A-Glance,"). As such, data moves from Lawson to GHX in the form of purchase order and purchase order acknowledgement data, and payments in an electronic data interchange (EDI) through a secure Internet connection. This is how Lawson pays Cardinal Health, which services the majority of UAB’s supply needs, as well as AllMed, a minority supply vendor, and various other specialty vendors.

Data moves from Lawson to Crystal Reports via an Open Data Base Connectivity (ODBC) connection. Crystal Reports is used to create specific reports for UAB, as Lawson’s canned reports are not sufficient.

Data also moves from Lawson to a number of UAB Oracle systems through interfaces. These interfaces include:

* Purchase order generation
* Accounts payable
* Finance for month-end close
* Check writing
* HealthQuest – charge master application that handles patient chargeable items (any item over $15 each)

An interface was created during the Lawson implementation in 2002-2003 to bring data into the system from the legacy ESI Nova system. Although all of the data from ESI Nova was brought into Lawson, manual data entry was also necessary because ESI Nova didn’t contain the same level of detail as Lawson, and didn’t do the more rigorous 3-way matching that Lawson does.

**6. Auto and manual Ordering via Lawson system:**

Most of the item ordering is handled by feeding data from handheld devices to Lawson system. This data feeds the information such as PAR number (the maximum number of items required to be in stock) and current number (number of items left on shelf in department) and minimum number of items required in stock all the times. These three numbers are used for calculating and ordering automated shipping through Lawson system from various vendors. Vendors get this auto generated list of items to be shipped or distributed to UAB health systems. PAR and minimum item numbers help to maintain the stock and avoids errors of over or under stocking.

Manual data entry is required to order each product which is not on a regular or auto ordering list. For every such product, an item master and packaging table is created. The item master includes item codes, description, pricing, number of items in each packet, etc. The total list price is displayed at the end of the table. The packaging table includes all the information for that particular item in its table form as well as it is posted on the box or case in which it is packaged. Each package has a barcode which keeps track of that particular shipment. Looking for non-regular items can be tricky as the “description” field has to be filled by the person who is ordering an item. It is a tricky field because the clinicians, manufacturer, and supply management staff may all call an item a different thing. In short the disruption field is not well designed for ordering non-regular items. Hence there is a chance of error while ordering an item.

1. **Customers of Lawson Supply chain management systems:**

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| --- |
| http://www.lawson.com/wcw.nsf/ecblank.gif?OpenImageResource |

Lawson serves approximately 4,000 customers in 40 countries. Lawson Software (Nasdaq: LWSN) provides advanced and mobile supply chain management applications to more than 100 healthcare providers. Lawson serves almost 4,500 facilities grouped under 500 different health care facilities. (Business Wire, 2008)

Here is a list of some Lawson customers in healthcare (Lawson Website, 2010):   
Greater Baltimore Medical Center

H. Lee Moffit Cancer Center & Research Institute

MedStar Health

The Healthcare Alliance of Greater Cincinnati

Uniontown Hospital

University of Alabama Health Services Foundation

Advocate Health Care System

Allina Hospitals & Clinics

API

Banner Health

BryanLGH Medical Center

Catholic Healthcare West

Franciscan Missionaries of Our Lady Health System (FMOLHS)

Greater Baltimore Medical Center

Gundersen Lutheran Health System

Healthcare Client Video

H. Lee Moffit Cancer Center & Research Institute

MedStar Health

Memorial Healthcare System

Nuffield Hospitals

St. Vincent Health

The Healthcare Alliance of Greater Cincinnati

Uniontown Hospital

University of Alabama Health Services Foundation

Unomedical Australia Limited

West Jefferson Medical Center

References:  
Business Wire (2008). More Than 100 Healthcare Providers Use Mobile Applications from

Lawson Software.

Retrieved February 9, 2010, From:

<http://findarticles.com/p/articles/mi_m0EIN/is_2008_Feb_25/ai_n24321948/?tag=content;col1>

Lawson Website (2010). Healthcare Customers.

Retrieved February 9, 2010, From Lawson Official Website:  
[http://www.lawson.com/wcw.nsf/SearchCustomersText?SearchView&Query=([Industry]=Healthcare)&SearchOrder=4&END](http://www.lawson.com/wcw.nsf/SearchCustomersText?SearchView&Query=(%5bIndustry%5d=Healthcare)&SearchOrder=4&END)

1. **Are any national patient safety goals tied to the use of this particular technology?**

The materials management division is subject to the same JCAHO safety standards related to supply storage, sterility maintenance, expiration dating, temperature monitoring on refrigerators and crash cart maintenance that the entire hospital is subject too. However the standards are not specific to the materials management division. OSHA does not provide regulation but the University of Alabama Department of Occupational Health and safety does provide education, training and supervision regarding general safety.

While the focus of national patient safety efforts have been on medication errors rather than materials management, the current focus on bar-coding patients and medications reflects the contributory role advanced technologies from materials management has played in patient safety strategies. Supply chain standards are currently being debated in the industry.

1. **Identify the top three to five vendors of the system.**

IBM/Cognos, Oracle, McKesson

1. **Compare each vendor.**

IBM/Cognos is primarily focused healthcare providers using their software as less of a tool for decreasing cost and increasing efficiency in materials management than as a tool for business process redesign for the healthcare facility. They primarily tout Cognos as a way to track clinical performance metrics against a set of goals decided by the healthcare organization in order to continuously improve the processes within the organization. Their focus tends to be on “performance management” than streamlining the day-to-day operations of materials management.

Oracle provides IT to numerous industries with healthcare being one of them. Like Cognos, Oracle seems to focus on the financial and human resource aspect of healthcare. Their materials management software (Oracle Supply Chain Analytics) is designed to be more of a way track costs and recognize inefficiencies.

McKesson is the oldest and most profitable company in healthcare software. Their software encompasses all aspects of a healthcare facility (i.e. pharmacy, EHR, etc). On the subject of materials management, they offer an Enterprise Resource Planning (ERP) software system. The ERP includes software for materials management (Pathway Materials Management), accounting and data analyses (Pathway Financial Management), and Human Resource applications (Horizon Human Resource Management). The problem, however, is that McKesson seems to want the healthcare facility to by the ERP as a package deal. If a facility wants to just use the vendor for materials management, it may be very difficult to integrated with financial and HR from other vendors.

1. **Additional Information:**

RFID – potential, UAB planning to add RFID for faster uploads of counts from handhelds. This is going to be implemented over the next few months.

Sources

GHX At-A-Glance. Retrieved from <http://www.ghx.com/DesktopModules/Bring2mind/DMX/Download.aspx?TabId=716&>

Pelletier, K. (2009). Mayo Clinc/Cardinal Health GLN Implementation: Improving Patient Safety and Supply Chain Efficiency with GS1 Standards: Mayo Clinic.

Standardization… Stat! Improving the Healthcare Supply Chain with Data Standards. (2010). Standardization… Stat! Improving the Healthcare Supply Chain with Data Standards. Retrieved from <http://www.gs1us.org/Default.aspx?tabid=246>

What is UNSPSC? Retrieved from <http://ptg.dnb.com.au/whatis_UNSPSC.aspx>